REQUEST FOR RECONSIDERATION

The claimed invention is directed to a process reacting thermoplastic polyurethanes with compounds having isocyanate groups which comprises aliphatic isocyanates having at least three isocyanate groups and aromatic diisocyanates.

Thermoplastic polyurethanes (TPUs) are well known polymers, whose property profile has been recognized as improvable by introducing crosslinking. Issues as to premature crosslinking as well as a desire for maximum crosslinking must be considered. Simple techniques for introducing a high degree of crosslinking are sought.

The claimed invention addresses this problem by providing a process in which a TPU is reacted with an isocyanate composition comprising iia) aliphatic isocyanates having at least three isocyanate groups and iib) aromatic isocyanates having two isocyanate groups. Applicants have discovered a mixture of **aliphatic** isocyanates having **at least three** isocyanate groups and **aromatic isocyanates** having two isocyanate groups to provide for good crosslinking properties which can be achieved simply such as by reacting in an extruder or injection molding apparatus. Such a process in nowhere disclosed or suggested in the cited references of record.

The rejections of claims 1, 2, 4, 7-9 and 12 under 35 U.S.C. §102(b) over Lagneaux et al. (PCT FR02/03646), of claim 3 under 35 U.S.C. §103(a) in further view of Sapper U.S. 2003/0032179, of claims 5 and 6 under 35 U.S.C. §103(a) in further view of Porter et al., of claim 10 under 35 U.S.C. §103(a) over Lagneaux et al. (PCT FR02/03646) and of claim 11 under 35 U.S.C. §103(a) in further view of Enlow et al. U.S. 6,254,712 are respectfully traversed.

None of the cited references suggest reacting a TPU with an isocyanate containing composition comprising aliphatic at least triisocyanate and aromatic diisocyanate.

As proposed by the examiner, applicants refer to the text of U.S. 2004/0236035 in reference to Lagneaux et al..

Lagneaux et al. fail to disclose or suggest polyurethane reaction with the combination of aliphatic at least triisocyanate and aromatic diisocyanate.

Lagneaux et al. describes the use of thermoplastic polyurethanes either alone or blended with other polymers, which are grafted with a crosslinking agent of diisocyanate **trimers** or blocked isocyanates. Paragraph [0018] identifies suitable trimers of diisocyanates as IPDI, an aliphatic diisocyanate trimer, as well as TDI, an aromatic diisocyanate trimer. Thus in terms of the diisocyanate trimer, a compound having at least three isocyanate groups, the reference suggests the use of both aliphatic and aromatic triisocyanates. There is no suggestion to have selected compounds having at least three isocyanate groups based on **aliphatic** isocyanates.

Page 2 of the outstanding official action appears to recognize this deficiency "While the invention does not generically include the use of mixtures of the acceptable isocyanates,..." but the office action points to example 3, asserting a disclosure of a mixture of MDI an aromatic diisocyanate and IPDI trimer an aliphatic isocyanate having three isocyanate groups.

Applicants note that example 3 identifies **three different compositions** 1) a mixture of 58277 (70 wt. %) and Tufprene:A (30 wt. %), 2) a mixture of 58277 (70 wt. %), Tufprene:A (30 wt. %) and IPDI: trimer (3 p.h.r.) and 3) a mixture of 58277 (70 wt. %), Tufprene:A (30 wt. %) and MDI (3 p.h.r.). Thus, by describing the use of IPDI trimer and MDI in **separate** compositions, there is not disclosure or suggestion of the isocyanate component being comprised of aliphatic isocyanates having at least three isocyanate groups and aromatic diisocyanates in the same composition.

In contrast, the claimed invention is directed to a process in which a TPU is reacted with an isocyanate composition comprising iia) aliphatic isocyanates having at least three isocyanate groups and iib) aromatic isocyanates having two isocyanate groups. As there is no suggestion of aliphatic isocyanates having at least three isocyanate groups and aromatic diisocyanates in the same composition, the claimed invention is clearly not anticipated by the cited reference.

The remaining references fail to remedy the basic defects of the primary reference.

Sapper has been cited for a disclosure of a crosslinking polyisocyanate having a functionality of from 2 .5 to 5 and a viscosity of from 100 to 10,000 mPas, but fails to suggest compounds having isocyanate groups comprising aliphatic at least triisocyanate and aromatic diisocyanate.

In addition, this reference describes an aqueous coating material that can be **hardened thermally and/or by using actinic radiation**, but fails to suggest a solution to the problem of achieving maximal crosslinking properties with very good process reliability in the production of **thermoplastic polyurethane**. The chemistries of an aqueous coating material that can be **hardened thermally and/or by using actinic radiation** and a **thermoplastic polyurethane** are completely different such that one of ordinary skill in the art would not combine the disclosures of the two references.

Porter has been cited for a disclosure of a poly(propylene oxide) polymer of an equivalent weight 1,000 to 5,000 used in the preparation of polyurethane and/or polyurea elastomers. However there is no disclosure of crosslinking with compounds having isocyanate groups comprising aliphatic at least triisocyanate and aromatic diisocyanate.

Enlow et al. has been cited for using extruders to process thermoplastic resins, but there is no disclosure of crosslinking with compounds having isocyanate groups comprising aliphatic at least triisocyanate and aromatic diisocyanate.

As the cited references fail to disclose or suggest crosslinking with compounds having isocyanate groups comprising aliphatic at least triisocyanate and aromatic diisocyanate, the claimed invention is neither anticipated nor would have been rendered obvious by the cited references and withdrawal of the rejections under 35 U.S.C. §102(b) and 35 U.S.C. §103(a) is respectfully requested.

Applicants submit that this application is now in condition for allowance and early notification of such action is earnestly solicited.

Respectfully submitted,

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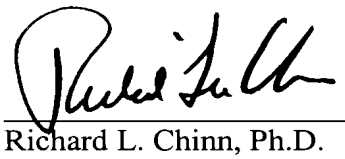

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